

WHAT IS CLAIMED IS:

1. A percutaneous vascular valve, comprising:
a stentless vascular valve body having at least
5 one flexible member for restricting blood flow, the
flexible member having an edge for contacting a wall of
a vascular vessel;
said edge adapted to attach to said wall.
- 10 2. The valve of claim 1, wherein said edge
includes barbs.
3. The valve of claim 1 or 2, wherein said edge
includes an adhesive.
- 15 4. The valve of any of claims 1-3, wherein said
flexible member comprises a remodelable material.
5. The valve of any of claims 1-4, wherein said
20 flexible member comprises a collagenous material.
6. The valve of claim 5, wherein said
collagenous material comprises an extracellular matrix.
- 25 7. The valve of claim 6, wherein the
extracellular matrix comprises submucosa.
8. The valve of any of claims 1-7, wherein the
stentless vascular valve body comprises at least two
30 leaflets.

9. The valve of any of claims 1-8, wherein said edge is configured to extend longitudinally along and at least partially circumferentially around the vessel wall.

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10. The valve of any of claims 1-9, wherein said edge is a reinforced edge.

11. The valve of claim 10, wherein said
10 reinforced edge has a thickness greater than a central portion of said flexible member.

12. A percutaneous vascular valve and delivery system, comprising:

15 a stentless vascular valve body having at least one flexible member for restricting blood flow, the flexible member having an edge for attachment to a wall of a vascular vessel;

a percutaneous deployment device, the deployment
20 device having an expandable element for selectively forcing said edge against the wall.

13. The valve and delivery system of claim 12, wherein said edge has a plurality of structural
25 elements for attaching to said wall.

14. The valve and delivery system of claim 13, wherein said structural elements include barbs.

30 15. The valve and delivery system of any of claims 12-14, wherein said edge includes an adhesive.

16. The valve and delivery system of any of claims 12-15, wherein said expandable element comprises a wire frame.

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17. The valve and delivery system of any of claims 12-16, wherein said stentless valve body comprises a remodelable material.

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18. The valve and delivery system of claim 17, wherein said remodelable material is collagenous.

19. The valve and delivery system of any of claims 12-18, wherein the stentless valve body is
15 releasably attached to the expandable element.

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20. The valve and delivery system of claim 19, wherein the stentless valve body is releasably attached to the expandable element with an adhesive.

21. The valve and delivery system of claim 19, wherein the stentless valve body is releasably attached to the expandable element with a removable component.

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22. The valve and delivery system of claim 21, wherein the removable component comprises a removable suture.

23. The valve and delivery system of claim 19,
30 wherein the stentless valve body is releasably attached

to the expandable element by an attachment adaptation on said body, said element, or both.

24. A medical device, comprising a valve of any
5 of claims 1-11, in combination with a percutaneous deployment device.

25. The medical device of claim 19, wherein said percutaneous deployment device has at least one
10 expandable element for forcing said edge of said valve against a vessel wall.

26. A method for modifying blood flow in a vascular vessel, the method comprising:
15 percutaneously delivering one or more pieces of flexible material to a site within a vascular vessel; and
percutaneously attaching at least portions of said one or more pieces of flexible material to walls of the
20 vascular vessel so as to form a structure that selectively permits blood flow in a first direction and resists blood flow in a second direction.

27. The method of claim 26, wherein said flexible
25 material has remodelable properties.

28. The method of claim 26, wherein said flexible material contains collagen.

30 29. The method of claim 26, wherein said flexible material comprises an extracellular matrix material.

30. The method of claim 29, wherein said extracellular matrix material contains collagen.

5 31. The method of claim 30, wherein said extracellular matrix material comprises submucosa.

32. The method of claim 26, wherein said structure includes a valve having two or more leaflets.

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33. The method of claim 26, wherein said flexible material comprises collagen, and wherein said percutaneously attaching includes delivering energy to facilitate attachment of said portions to the wall.

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34. The method of claim 33, wherein said energy includes electromagnetic radiation.

35. The method of claim 34, wherein said energy
20 is selected from microwave, radio frequency, laser, and ultraviolet light energy.

36. The method of claim 33, wherein an energy-absorbing substance is provided in contact with said
25 portions, and wherein said energy activates the energy-absorbing substance to attach said portions to the wall.

37. The method of claim 33, wherein the energy
30 welds said portions to the wall.

38. The method of claim 26, wherein said percutaneously delivering comprises deploying the flexible material from a lumen of a percutaneously advancable device.

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39. The method of claim 38, wherein said percutaneously delivering comprises deploying a delivery structure from the lumen, the delivery structure including the flexible material releasably held to an expandable element.

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40. The method of claim 39, wherein the expandable element includes a balloon.

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41. The method of claim 38, wherein the expandable element includes a wire structure.

42. The method of claim 26, wherein said attaching includes attaching a band of said flexible material in a path extending at least partially longitudinally and at least partially circumferentially along the wall.

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43. A percutaneous vascular valve, comprising:
a vascular valve body free of any support structure and having at least one movable member for restricting blood flow, the movable member having an edge for contacting a wall of a vascular vessel;
said edge adapted to attach to said wall.

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